Chapter 3.18
Technologies in Support of Knowledge Management Systems

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INTRODUCTION

Knowledge management systems (KMSs) support the various knowledge management (KM) functions of knowledge capture, storage, search, retrieval, and use. To do this, KMSs utilize a variety of technologies and enterprise systems. This chapter surveys the various technologies and enterprise systems. Specific attention is placed on enterprise systems that integrate KM into organizational business processes, and technologies that enhance the effectiveness of these implementations. The chapter is based primarily on research summarized in *Case Studies in Knowledge Management* (Jennex, 2005a) and articles published by the Knowledge Management Track at the Hawaii International Conference on System Sciences (HICSS).

DOI: 10.4018/978-1-60566-026-4.ch588

BACKGROUND

Knowledge

Davenport and Prusak (1998) view knowledge as an evolving mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. They found that in organizations, knowledge often becomes embedded in artifacts such as documents, video, audio, or repositories and in organizational routines, processes, practices, and norms. They also say that for knowledge to have value, it must include the human additions of context, culture, experience, and interpretation. Nonaka (1994) expands this view by stating that knowledge is about meaning in the sense that it is context specific. This implies that users of knowledge must understand and have experience

with the context, or surrounding conditions and influences in which the knowledge is generated and used for it to have meaning to them. This also implies that for a knowledge repository to be useful, it must also store the context in which the knowledge was generated. That knowledge is context specific argues against the idea that knowledge can be applied universally, however it does not argue against the concept of organizational knowledge. Organizational knowledge is considered to be an integral component of what organizational members remember and use, meaning that knowledge is actionable.

Polanyi (1967) and Nonaka and Takeuchi (1995) describe two types of knowledge, tacit and explicit. Tacit knowledge is that which is understood within a knower's mind, and which cannot be directly expressed by data or knowledge representations and is commonly understood as unstructured knowledge. Explicit knowledge on the other hand is that knowledge which can be directly expressed by knowledge representations and is commonly known as structured knowledge. Current thought has knowledge existing as neither purely tacit nor purely explicit. Rather, knowledge is a mix of tacit and explicit, with the amount of explicitness (only one dimension needs to be measured) varying with each user. This is the knowledge continuum where purely tacit and purely explicit form the end points, with knowledge existing somewhere on the continuum between the two end points. Smolnik, Kremer, and Kolbe (2005) have an individual position of knowledge on the continuum through context explication, where context explication reflects the experience and background of the individual. Nissen and Jennex (2005) expand knowledge into a multidimensional view by adding the dimensions of reach (social aggregation), lifecycle (stage of the knowledge lifecycle), and flow time (timeliness) to explicitness. Research is continuing to refine the concept of knowledge and its dimensions.

Knowledge Management

Jennex (2005c) utilized an expert panel, the editorial review board of the *International Journal of Knowledge Management,* to generate a definition of KM as the practice of selectively applying knowledge from previous experiences of decision making to current and future decision-making activities, with the express purpose of improving the organization's effectiveness. Another key definition of KM includes Holsapple and Joshi (2004) who consider KM as an entity's systematic and deliberate efforts to expand, cultivate, and apply available knowledge in ways that add value to the entity, in the sense of positive results in accomplishing its objectives or fulfilling its purpose. Finally, Alavi and Leidner (2001) concluded that KM involves distinct but interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application. Taken in context, these definitions of KM focus on the key elements of KM: a focus on using knowledge for decision making and selective knowledge capture. This is important as the selective focus on knowledge capture separates KM from library science, which attempts to organize all knowledge and information, and the decision-making focus emphasizes that KM is an action discipline focused on moving knowledge to where it can be applied. Ultimately, KM may best be described by the phrase, "getting the right knowledge to the right people at the right time," and can be viewed as a knowledge cycle of acquisition, storing, evaluating, dissemination, and application.

Knowledge Management Systems

Jennex (2005c) views a KM system as that system created to facilitate the capture, storage, retrieval, transfer, and reuse of knowledge. The perception of KM and KMSs is that they holistically combine